GCF Protocol Assessment

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Introduction

On November 18, 2008, the U.S. states of California, Illinois, and Wisconsin, the Brazilian states of Acre, Amapá, Amazonas, Mato Grosso, and Pará, and the Indonesian provinces of Aceh and Papua signed a series of Memoranda of Understanding (MOUs) at the Governors' Climate Change Summit in Los Angeles, California. The MOUs explicitly requested that a Joint Action Plan (JAP) be developed to identify an implementation plan to further forest climate goals. The team assembled to implement the MOUs and develop the JAP became known as the Governors' Climate and Forests Task Force (GCF). The JAP identifies three key deliverables:

1. Identify project-level standards and criteria for compliance grade offsets and perform a protocol assessment using these standards and criteria.
2. Develop accounting frameworks and coordination mechanisms.
3. Provide a needs assessment to identify priorities for future activities.

This report addresses the first deliverable; identifying project level standards and criteria and performing a protocol assessment. The report also identifies priority issues to be addressed and recommended strategies to resolve these issues.

Developing Consensus-based Standards and Criteria

The first step in the protocol assessment process was to develop a set of agreed upon standards and criteria to be the basis of the assessment. This effort was led by Ernesto Roessing of the state of Amazonas. A draft set of criteria and standards was prepared by Dogwood Springs Forestry with input from Toby Janson Smith of Conservation International. The draft included the following criteria for offset accounting standards:

1. Project Description
2. Project Management
3. Project Eligibility
4. GHG Sources, Sinks, and Reservoirs
5. Additionality and Baseline
6. Leakage
7. Measurement
8. Permanence
9. Project Co-benefits
10. Stakeholder Participation
11. Monitoring
12. Verification

The draft was distributed to GCF members and NGO stakeholders in all MOU states. Feedback was requested to use the criteria and standards matrix to provide their vision of a framework needed for compliance-grade emissions reductions in Brazil and Indonesia (and other tropical forest countries) from

forest activities that would be accepted by emerging compliance regimes such as those in the U.S. These recommended edits were coalesced by Amazonas and redistributed for additional comment. The standards and criteria agreed to by the work group are replicated in full in Appendix A: Work Group I Criteria and Standards.

The next step included comparing existing forest project protocols to the consensus-based criteria and standards. The protocols assessed included:

1. Voluntary Carbon Standard (VCS): The Voluntary Carbon Standard's (VCS – www.v-c-s.org) agriculture and forestry (AFOLU) rules, launched in November 2008, came out of a two-year development process including drafting by leading experts, peer review, and stakeholder consultation. VCS is in use throughout the world and provides methodologies for REDD, restoration and reforestation, and improved forest management.

2. Climate Action Reserve Forest Protocol: The Climate Action Reserve's (CAR - www.climateactionreserve.org) Forest Protocol, revised through a two-year stakeholder process, was adopted by CAR's Board and the California Air Resources Board in September, 2009. The CAR forest protocol provides project guidance for reforestation, improved forest management, and avoided conversion throughout the United States.

3. The Clean Development Mechanism (CDM) provides project guidance for afforestation/reforestation projects. The Clean Development Mechanism (CDM) defined in Article 12 of the Kyoto Protocol (KP) to the United Nations Framework Convention on Climate Change (UNFCCC) allows industrialized countries (Annex 1 Parties) to acquire Certified Emission Reductions (CERs) from project activities implement in developing countries (non-Annex 1Parties). The CERs generated by such project activities can be used by Annex 1 Parties to help meet their emissions reduction targets under the Kyoto Protocol. Current discussions are underway to consider how REDD projects could be considered under a CDM framework.

4. The Climate, Community & Biodiversity Standards (CCBS): The Climate, Community & Biodiversity Standards (CCBS – www.climate-standards.org) focus on project design and the broader social and biodiversity benefits of these projects. CCBS can be applied together with other protocols to ensure strong consideration of local communities and biodiversity. CCBS is in use throughout the world.

5. Chicago Climate Exchange (CCX): The Chicago Climate Exchange (www.chicagoclimatex.com) is the only cap and trade system in the U.S. and is responsible for 44% of the transactions in the voluntary market in 2008. CCX accepts REDD projects but has no protocols or methodologies for these projects.

Each protocol was compared point by point to the criteria and standards in Appendix A. In addition, interviews were conducted with experts involved in protocol development and implementation.

Seven of the criteria in the protocols reviewed were closely aligned to the stakeholder standards. While some inconsistencies between the protocols and work group recommendations exist, there is general agreement for the consensus standards associated the following criteria:

Project Description
Project Management
Project Eligibility
GHG Sources, Sinks, and Reservoirs
Measurement
Monitoring
Verification

However, examination of the protocols shows they are not well-aligned with the other five criteria and associated stakeholder standards. These criteria are:

Additionality and Baselines
Leakage
Permanence
Project Co-benefits
Stakeholder Participation

The issues that are unresolved in the comparison of stakeholder consensus standards and existing protocols are examined in detail in the following sections including the strengths and challenges each protocol has in terms of achieving alignment.

Additionality and Baselines

The stakeholder work group defined additionality as the required demonstration that Greenhouse Gas (GHG) emissions reductions are additional to those that would occur in a business as usual scenario. The baseline is defined as an assessment of the changes in GHG stocks and flow expected in the absence of the project. CCBS was not assessed against additionality and baseline criteria and standards since the protocol provides no unique guidance for GHG accounting. Table 1 below summarizes the findings of assessing each protocol against the criteria and standards developed by the work group for additionality and baseline.

Table 1. Identified strengths and challenges for additionality and baseline approaches in protocols compared to the stakeholder-recommended criteria and standards.

Protocol	VCS/CDM	CAR	CCX
Description	Project-based methodologies with multiple or double approval process.	Performance-based standard with prescriptive approaches for different project types.	Base year inventory established at beginning of project with regulatory test.
Strengths	Adaptable to different geographies and project types, innovative, detailed and tailored to specific project conditions and activities, potential for high levels of accuracy.	Standardized, defined parameters, tends to be more transparent, net reductions reconciled across projects more easily, scalable to rapid growth in market size.	Efficient, easy to qualify for credits.
Challenges	Complex multiple methodologies, difficult to compare and reconcile across projects, rigor dependent on expert-led, multiple or double approval process, high ongoing administrative overhead, limits to capacity and scalability.	Current limited application, high initial administrative investment and extensive top-down development efforts required to expand to other geographies, time intensive at onset.	Vague, no economic test, additionality not established with rigor comparable to other protocols.
Unresolved Additionality and Baseline Issues			
Issues Related to Creating a Standardized Approach to Baselines: 1. Reconciliation of baseline determination and net reductions across projects. 2. Parity with different kinds of projects (e.g., frontier, mosaic, degradation) in different political and ecological landscapes. 3. Accounting for the different uncertainties in baseline calculations. 4. At what level to include community and biodiversity impacts. 5. Incorporation of new research and tools.			

Leakage

The stakeholder group incorporated the definition adopted by the UNFCC at the Marrakesh Accords in 2001 where leakage is defined as the net change of anthropogenic emission by sources of GHGs which occurs outside the project boundary and which is measurable and attributable to the project activity. Table 2 below summarizes the findings of assessing each protocol against the criteria and standards developed by the work group for leakage.

Table 2. **Identified strengths and challenges for leakage approaches in protocols compared to the stakeholder-recommended criteria and standards.**

Protocol	General		VCS/CAR	CCX	CCBS
Description	National or Sub-national test.	Project Area Monitoring- Defining a 'Leakage Belt.'	Estimates of leakage by location and project type based on social and economic factors related to deforestation. Use of look-up tables and some project specific analysis.	Changes in GHG emissions for forestry projects outside of project boundaries not expected or needed.	Establish alternative sustainable livelihoods or sustainable supply such as intensively managed plantation to address leakage.
Strengths	Good coverage within a country or region.	Potential for direct measurement of project impacts.	Efficient, reflects most recent research and data on leakage impacts.	Simplifies analysis for submission and annual reporting.	Neutralizes leakage drivers.
Challenges	Dependent on robust national and regional data capacity and monitoring.	Accuracy dependent on appropriate choice of scale, continuous monitoring, challenge of linking cause and effect.	Use of look-up tables doesn't necessarily reflect individual project attributes and related market conditions.	Ignores impacts of project activities and creates a potential for overstating emissions credits.	Mitigating activities may be limited and expensive.
Unresolved Leakage Issues					
Difficult to measure and monitor. **1. Estimating market leakage.** **2. Leakage responsibility of projects over time.** **3. Setting a leakage reference area.** **4. Shifts to unaccounted for activities (selection logging).** **5. Shifts in investment or livelihoods.** **6. Monitoring and measuring activity shifting leakage.** **7. Wide variety of estimates, data gaps & research needs.**					

Permanence

The stakeholder work group defined a permanent reduction/removal as a reduction/removal that is:

1. Substantially equivalent to the emissions the reduction/removal is offsetting.
2. Ensured with monitoring and verification.
3. Supported by a governance authority that clearly articulates corrective actions or other remedies when project obligations are breached for the duration of the crediting period.
4. Backed by the establishment of buffer pools or insurance to address the risks of non-permanence.
5. Backed by establishment or planned resolution of land and resource tenure with consideration of traditional land tenure and rights systems.

Table 3. Identified strengths and challenges for permanence approaches in protocols compared to the stakeholder-recommended criteria and standards.

Protocol	VCS	CAR	CCX
Description	Provide Buffer Pool of Credits to Address Reversals.	Buffer Pool To Address Reversals Plus Binding Contract To Provide Registry with Remedies in the Event of Reversals	Buffer Pool Contribution of 20% and 15-Year Forest Retention Commitment
Strengths	Buffer pool contribution system results in incentives for project proponents to lower reversal risks, buffer pool populated by agriculture and forestry projects from around world provides diversification risk mitigation.	Contract defines permanence at 100 years, more accountability and liability for project proponent, buffer pool contribution system results in incentives for project proponents to lower reversal risks.	Standardized buffer pool contribution, requirement to keep the forest for at least 15 years.
Challenges	Permanence timeline not clearly linked to buffer contributions, reliance on appropriate risk assessment with multiple variables and uncertainties, lack of experience in administration of buffer pool, pool compensates intentional reversals.	Hard to implement and enforce contracts in developing countries and across geopolitical boundaries, lack of experience in administration of buffer pool.	Non-binding commitments, no corrective actions or other remedies, 15 years falls short of equivalence to direct emissions reductions.
Unresolved Permanence Issues			
1. Defining the permanence timeframe and demonstrating equivalence to direct emissions reductions. **2. Ensuring permanence with monitoring, verification.** **3. The need for a governance authority that can clearly articulate corrective actions or other remedies when project obligations are breached for the permanence duration.** **4. Assessing risk in a standardized manner that is calibrated to the permanence timeframe.**			

Co-benefits and Stakeholder Participation

The work group agreed to a consensus standard for co-benefits and stakeholder participation that has the following attributes:

1. Co-benefits are identified, assessed and monitored against the social and biodiversity status of the baseline/reference land-use scenario. This infers therefore that a baseline assessment of biodiversity and social conditions is conducted as part of the project.
2. Projects incorporate community partnership and benefit-sharing.
3. Projects do not allow the use of invasive species and provide justification of any use of non-native species.
4. The criteria for co-benefits articulate the use of sustainable forestry management practices.
5. The project engages active participation of all stakeholder groups.
6. Mechanisms are in place to receive and resolve grievances and disputes associated with the project.
7. Project information must be available, accessible and understandable.

Table 4. Identified strengths and challenges for co-benefits and stakeholder participation approaches in protocols compared to the stakeholder-recommended criteria and standards.

Protocol	VCS/CDM/CCX	CAR	CCBS
Description	Minimal level of Co-benefits.	Focus on Environmental/Ecosystem Benefits.	High level of Environmental and Social Benefits.
Strengths	Focus on carbon accounting, encourage use of multiple-benefit standards such as CCBS, FSC to address co-benefits.	Ensures a high level of environmental integrity for forest ecosystems.	Provides framework to assess quality of stakeholder participation, particularly of local communities and Indigenous Peoples, and significant biodiversity and community benefits.
Challenges	Leaves levels of co-benefits up to market.	Doesn't address social elements of co-benefits. Less flexible across different geographical and cultural settings.	May become unworkable in some project situations (e.g., where multiple-benefits cannot be generated) or redundant to regulatory levels in some geographies, high monitoring expense. Requires commitment to unfunded ecosystem assets.
Unresolved Co-benefit and Stakeholder Participation Issues			
1. The level of stakeholder participation and co-benefits that are the minimum requirements for credit issuance regardless of geography, project size or project type. **2. Assessing projects across varying geographies for biodiversity and community/economic/ Indigenous Peoples impacts.** **3. Standards and verification for distribution of benefits.** **4. Incorporation of "higher" levels of standards.**			

Summary of Each Protocol's Strengths and Areas for Possible Modification

The tables below summarize the major findings of how the existing protocols match up with the stakeholder consensus standards. The approaches where the protocols are least aligned provide direction for further examination and areas for possible modification.

Table 5. Summary of key strengths and areas of possible modification for VCS.

VCS	
Key Strengths	Areas for Possible Modification
Full range of forest project activities currently eligible.	Multiple complicated methodologies with consistency dependent on double approval process.
Workable framework for multiple geographies and landscapes.	Ability to reconcile accounting across projects.
Mechanism in place to account for both activity shifting and market leakage.	Low levels of co-benefits required.
Risk assessment and robust buffer pool contributions provides incentives for reducing reversals .	Sole reliance on a buffer pool system which may lack calibration to a permanence timeframe.

Table 6. Summary of key strengths and areas of possible modification for CAR.

CAR	
Key Strengths	Areas for Possible Modification
Standardized baseline determination.	Only U.S. Forest Projects eligible.
Permanence backed by remedies established with mandatory contract.	Limited workability for additional geographies at this time.
Mechanism in place to account for both activity shifting and market leakage.	Extensive up-front development required for expansion.
Moderate to high levels of environmental co-benefits required.	Low levels of social co-benefits required

Table 7. Summary of key strengths and areas of possible modification for CDM.

CDM	
Key Strengths	Areas for Possible Modification
Well-vetted and conservative accounting.	Only A/R Projects types eligible.
Framework potential for multiple geographies and landscapes.	Only temporary credits available.
Mechanisms in place to account for leakage.	Multiple methodologies with consistency dependent on multiple approval process.

Validation and verification carried out with experienced process and replication is clear goal.	Low levels of co-benefits required.

Table 8. Summary of key strengths and areas of possible modification for VCS.

CCBS	
Key Strengths	Areas for Possible Modification
High levels of co-benefits required.	No issuance of credits.
High levels of stakeholder participation required.	Little specific guidance for carbon accounting for baselines, etc.
CCBS validation and verification guidance in place.	Specific approaches for leakage not identified.
Works well in combination with other carbon accounting standards.	No clear definition of permanence or remedies for reversals.

Table 9. Summary of key strengths and areas of possible modification for CCX.

CCX	
Key Strengths	Areas for Possible Modification
High volume of voluntary market transactions.	Additionality and baseline lacks rigor of other protocols.
Efficient, easy to qualify for credits.	No Leakage assessment required.
Simplified submission and annual reporting requirements.	Falls short of equivalence to direct emissions reductions.

Forest certification requirements for Sustainably Managed Forestry project type.	Lacks transparency and any requirements for social benefits.

Moving Forward

The goal of this assessment is to inform the parties to the MOU concerning key rules and design of a regulatory infrastructure to include REDD and other forest projects in emerging GHG compliance regimes. To move this goal forward, the unresolved issues identified in this report need to be addressed. This can be accomplished by some additional work by Group 1 which includes clarifying the consensus standards, considering key policies, and road testing the protocols and suggested modifications.

Table 10. Summary of unresolved issues.

Summary of Unresolved Issues

Additionality and Baseline
- ✓ Reconciliation across projects.
- ✓ Parity with different kinds of projects.
- ✓ Accounting for uncertainties.
- ✓ Level of community and biodiversity impacts
- ✓ Incorporation of new research and tools.

Leakage
- ✓ Difficult to measure and monitor.

Permanence
- ✓ Defining timeframe.
- ✓ Ensuring with monitoring and verification.
- ✓ The need for governance authority.
- ✓ Calibrating the assessment of risk.

Co-Benefits Participation & Stakeholder Participation
- ✓ Minimum levels of stakeholder participation and co-benefits.
- ✓ Assessing projects across varying geographies.
- ✓ Standards and verification for distribution of benefits.
- ✓ Incorporation of higher levels of standards.

To clarify the consensus standards, the stakeholders to the Group 1 Criteria and Standards document need to bring further review to determine which approaches will be acceptable for the issuance of compliance grade credits. Some examples where clarification is needed are with standardized versus project specific methodologies,

minimum levels of leakage measurement, definition of a permanence timeframes, contracts and remedies required to ensure permanence, and minimum requirements for stakeholder participation and project co-benefits. Consideration of overarching policies will be essential to assist the work group in clarifying a more specific set of standards and further resolution on issues. A policy discussion and determination session is recommended as a lead to further review of the standards.

Table 11. Establishing key policies.

Establishing Key Policies
• **Administrative Costs:** Managing costs at acceptable levels. • **Timeliness:** Allow crediting of pilot project during process of addressing unresolved issues. • **Governance:** Identify necessary infrastructure to ensure commitments are adhered to, monitoring is ongoing, and the validation/verification processes are working. • **Scalability:** Designing system requirements to meet anticipated market demand. • **Credit types:** Future role of expiring credits. • **Workability:** Solutions work on the ground and are cognizant of capacity and cost.

Additional work also needs to be done to test the protocols on the ground. This test should be conducted by GCF Work Group I members plus NGOs and experts from each of the protocols evaluated in this document. This group should create a list of pilot projects that meet an initial screen of minimal criteria. These pilot projects would serve to test approaches developed to address the unresolved issues. An interim period of 2 years could be established for such a study during which time the pilot projects would be allowed to issue credits provided the project adheres to the evolving guidelines from the work group. An initial list of potential pilot projects is found in Appendix B.

Appendix A. Work Group I Criteria and Standards

Ref	Criteria	Description	Standards
1.	**Project Description**	Written description of project including: project type, location including physical and jurisdictional boundaries, municipalities involved (if applicable), legal, social and biological attributes, historical context, current and past land use, land tenure and resource use rights (statutory and customary), and natural heritage.	• Complete and detailed. • Utilizes boundary maps based on GPS readings. • Social, biological, and land-use attribute descriptions based on recent surveys, photographic documentation. • Provides adequate background for project evaluation. • Includes context and justification for location of project area.
2.	**Project Management**	Project coordination and responsibility for the activities.	• Entities that will develop and manage the project are clearly defined. • Adequate level of experience of the management team in the implementation of land management projects. • Partner organizations to support the project also clearly defined.
3.	**Project Eligibility**	The rules that determine if a set of planned activities on a specific site to remove, reduce, or prevent GHG emissions can be eligible for generating carbon credits.	• Eligibility rules are explicit and clearly describe requirements for documentation of compliance. • Excluded entities or activities clearly defined, and the criteria for the exclusion listed. • Allows broad landowner and rights holders' participation. • Fungible across range of project types and GHG programs (e.g., allowing direct comparison for emissions reductions from energy and forestry projects).
3.a	**Eligible Entity**	Discrete legal unit or individual who owns the project and the potential GHG emission reductions and/or carbon sinks generated by the project.	• Names, addresses, and contact information for the persons, or business entities that own or control the project property as well as those who will claim the carbon credits associated with reductions in GHG emission reductions or creation of carbon sinks, along with a description of their ownership interests. • Demonstrated legal ownership or long-term management rights or resource use rights over project area (e.g., certified copies of the instruments through which their ownership interests were secured). • Project ownership established through an agreement between all rights holders based on their free, prior and informed consent. • Clear explanation of relationship of the proponent or the one responsible for the emission reduction activities if not the landowner.
3.b	**Eligible Project Term**	The start date and duration of project activities and associated monitoring, verification and crediting periods.	• Start date is clearly defined as the point at which GHG emission reductions or sequestration begins. • Defined limits to retroactive claims, linkage of project activities to emission reductions and/or removals or to a local, national or international initiative. • Defined crediting period, fixed or renewable. • Defined timetable for the duration of the project with justification.
4.	**GHG Sources, Sinks, and Reservoirs**	The GHG sources, sinks, and reservoirs to be accounted for in quantifying a project's emissions reductions and removals. This includes both primary effects such as those effects from planned conservation of carbon stocks,	• All GHG sources, sinks and reservoirs clearly identified as required or optional for project baseline determination, monitoring and reporting depending on project type and specific project activities. • Documented and addressed with standards, methodologies, and tools already used and recognized.

Ref	Criteria	Description	Standards
		as well as secondary effects such as emissions resulting from project implementation such as the burning of fossil fuels, impacts to land use etc.	
5.	**Additionality**	Required demonstration that GHG emissions reductions are additional to those that would occur in a business as usual scenario.	• Clear and transparent identification of the emission reductions / removals that would have happened in the absence of the project as compared to those that happen as a result of project activities. • Use of established and recognized standards, methodologies, and tools.
5.a	**Additionality: GHG Baseline Determination**	An assessment of the changes in GHG stocks and flow expected in the absence of a project.	**REDD Projects** • The probability of forestland conversion or degradation substantiated and includes a concise description of the agents, causes and drivers of deforestation and degradation. • Estimates of carbon sinks and deforestation and / or degradation rates take into account similar practices in similar and / or comparable regions to that of the project. **IFM Projects** • Business as usual management practices defined in terms of silvicultural practices, rotation ages, and restoration activities. **Reforestation/Afforestation Projects** • Business as usual addresses probability of reforestation activities in absence of project, describing how stocks existing prior to reforestation activities are quantified. **All Projects** • Reconciled across projects within sub-regions and across sub-regions in terms of linking to regional and national targets. • Includes estimates of how forest stock changes would impact the communities, the biodiversity, the water resources and the soil in the absence of the project, taking into account the inventoried stocks at the time of project initiation. • Guidance for use of modeling and forecasting based in transparent protocols and methodologies, endorsed by local / regional experts. • Baselines established conservatively and for REDD projects should be updated periodically (e.g., at least once every ten years).
5.b	**Additionality: Legal and Regulatory Considerations for Baseline**	The legal, regulatory, and policy factors that influence the deforestation and land use dynamics are taken into consideration when defining the baseline (i.e., Environmental Impact Assessment and / or Social Impact Assessment requirements and / or CEQA / NEPA equivalent).	• Baseline scenario fully demonstrates its relationship to the applicable laws and regulations in the project region. • In case of a trend, shown in the baseline, towards the lack of enforcement of laws and regulations, demonstrate that this is a common practice in the project's region. • Documents include copies of statutes, regulations, and policies potentially affecting the baseline. • Evaluation of public policy and relevant trends includes quantitative information on enforcement and compliance in the project area, similar areas in the same jurisdiction; and enforcement of similar statutes, regulations, and processes in adjoining jurisdictions. • Includes regulations pertaining to stakeholder participation.
5.c	**Additionality: Economic**	The financial, budgetary, and economic factors that influence	• Includes analysis of financial, budgetary, and economic factors that influence planned

Ref	Criteria	Description	Standards
	Considerations for Baseline	deforestation and land use dynamics are taken into account when determining the baseline.	deforestation and/or degradation activities in the baseline scenario as compared to other land uses in the region.
6.	**Leakage**	Net change of anthropogenic emissions by sources of GHGs which occurs outside the project boundary and which is measurable and attributable to the project activity (*as defined by the Marrakesh Accords, UNFCC 2001)*	• Accounting for activity shifting leakage or other material changes in GHG emissions caused by project activities outside of project boundaries. • Leakage calculations incorporated into the number of net emissions reductions credits associated with the project.
6.a	**Activity Shifting Leakage**	Increase in GHG emissions due to shifts in agricultural activities or land conversion occurred outside the project area and beyond what was expected in the baseline and which can be attributable to the project's implementation.	• All activity shifting leakage appropriately accounted for, and subtracted from the number of emission reduction credits issued • The concept of "activity shifting leakage" takes into account specific approaches in the context of the projects submitted.
6.b	**Market Leakage**	Market based supply shifts to substitute products that may have negative climate effects.	• Accounting methodology defined. • Market leakage accounted for (using look up tables or specific analysis) in cases where timber supply is significantly reduced as a result of the project. • In line with the Kyoto Protocol, market impacts outside the country borders do not have to be accounted for.
7.	**Measurement**	Estimation and quantification of GHGs emissions and sequestrations associated with the forest project.	• All carbon stocks and flows expected to significantly change are estimated and/or quantified and reported. • Requirements for measurements/estimates/sampling are updated regularly as science improves.
7.a	**Measurement: Standardized Definitions**	Set of definitions set up and established by authority as a rule for the measure of quantity, weight, extent, value, or quality and applied consistently across a set of methodologies.	• Use of established standard definitions and methodologies recommended for the measurements and equations. • The methodology used to measure the stocks is replicable.
7.b	**Measurement: Quantification of Carbon Stocks**	Net increases or decreases in forest carbon stocks including above and below-ground biomass, dead wood, litter, soil organic carbon, and harvested wood products.	• Initial inventory methodology based on recognized methodologies and tools agreed upon by local and regional experts. • Ongoing inventory system in place to update forest carbon stock changes on a regular basis. • Methodology application variable depending on project activity type.
7.c	**Measurement: Quantification of other GHG Emission Sources**	Some project activities (e.g., preparing land for tree planting) may generate emissions not associated with specific carbon pools.	• All significant GHG emission sources associated with the project accounted for and/or estimated, e.g., emissions from biomass burning during site preparation; emissions from fossil fuel combustion; direct emissions from the use of synthetic fertilizers; and emissions from N-fixing species.

Ref	Criteria	Description	Standards
7.d	**Measurement: Statistical Confidence**	Statistical methods used to indicate the reliability of an estimate.	• Field measurements and estimates meet a specified benchmark for accuracy and are reviewed and updated regularly over time. • Discounts given when statistical confidence levels are below requirements.
7.e	**Measurement: Biodiversity**	Assessment of project impacts on biodiversity.	• Use of appropriate methodologies and indicators (for example, the analysis of the habitats of key species, analysis of connectivity) to estimate changes in biodiversity resulting from the project and making use of local traditional knowledge as appropriate. • Includes animal and plant species (timber and non-timber) potentially affected by the project and of importance to the communities that are threatened with extinction or of ecological importance (e.g., Umbrella or keystone species).
7.f	**Measurement: Socio-Economic**	Assessment of project impacts on socio-economic factors for region, forest-dependent communities, and Indigenous Peoples.	• Use of appropriate methodologies and indicators for long-term livelihood, poverty alleviation, impacts on cultural values, and sustainable economic development. • Evaluation and reporting on the rights of forest-dependent communities and Indigenous Peoples. • Includes review of distribution of project revenues among stakeholders.
8.	**Permanence**	The removal or storage of carbon in forestry projects produces durable climate benefits.	• Substantially equivalent to direct emissions reductions. • Permanence ensured with monitoring and verification. • Governance authority clearly articulates corrective actions or other remedies when project obligations are breached for duration of crediting period. • Establishment of pool buffers or insurance to address the risks of non-permanence.
8.a	**Permanence: Land and Resource Tenure**	The property and the right to use the land and its resources in relation to the credits generated by the activity; may be limited to certain resources ("resource tenure") such as timber or water.	• Land and resource tenure in project area is clearly established and legally recognized. • System available by which to verify the legal ownership and right of land and/or carbon on land. • Where customary rights to land, territories and resources in the project differ from statutory rights, these are included in project documentation and annual reporting. (Customary rights refers to patterns of long-standing community land and resource usage in accordance with 'Indigenous Peoples' and 'local communities' customary laws, values, customs, and traditions, including seasonal or cyclical use, rather than formal legal title to land and resources issued by the State). • Free, prior and informed consent for all project activities affecting statutory or customary rights holders potentially affected by the project. • Demonstration that people or entities with statutory or customary rights to the forest resources are the people who will participate effectively in project development and submittal. • Consideration included of traditional land tenure and rights systems, as well as of traditional systems for allocating rights to use natural resources.
8.b	**Risk of Non-Permanence – Fires, Pests, Changes in Forest Management**	The non-permanence (emission) of carbon stocks due to external factors, natural or anthropogenic causes, which interfere in the estimated project stock dynamics, such as illegal logging, forest fires, disease, pests, agricultural expansion,	• Assessment methodology for different kinds of non-permanence (natural and anthropogenic). • Assignment of clear responsibilities for non-permanence including liabilities and rules for compensation, including utilizing the buffer reserve system.

Ref	Criteria	Description	Standards
		etc.	
8.c	**Permanence: Use of Buffers**	Carbon emission reductions generated by project activities but withheld from the market that represent insurance against non-permanence.	• All projects establish buffer pool at initial verification of emissions reductions. • A portion of credits withheld at all verification events. • Size of the buffer pool based on the project's risk of non-permanence, readjusted at periodic verification process. • Buffer pools used to compensate for any unexpected emissions.
9.	**Project Co-Benefits**	Benefits in addition to long-term climate benefits provided by project activities.	• Projects benefit biodiversity and local forest dependent communities and indigenous people. • Co-benefits identified, quantified, and described qualitatively. • Measured against the social and biodiversity status of the baseline / reference land-use scenario. • Projects incorporate community partnership and profit-sharing.
9.a	**Project Co-Benefits: Ecosystem Preservation - Native Species /Wildlife Habitat Elements**	Project benefits that improve or conserve natural ecosystem processes and enhance biodiversity.	• Projects generate demonstrable net biodiversity and ecosystem service benefits. • No use of invasive species and justification of any use of non-native species. • Guidance articulates the use of sustainable forestry management practices, demonstrated by a) recognized by 3rd party certification or b) government recognized forest management plan, or c) utilization of harvest rotation practices that ensure canopy retention and increasing levels of standing live trees over time.
9.b	**Project Co-Benefits: Forest-Dependent Communities and Peoples**	Project activities that positively impact quality of life, levels of economic activity and sources of earned income for residents who rely heavily on forests and other activities linked directly or indirectly to natural resources.	• Clear and equitable benefits to local forest-dependent communities and stakeholders, based on their definition of priorities and evaluation of results, e.g. investment in sustainable income generation, benefit sharing mechanisms, employment, etc. • Projects incorporate community partnership and profit-sharing. • Communities provided information about climate change. • Assure that the project does not require the relocation of persons without their free prior and informed consent and fair compensation, and that it also solves the land tenure issues at the area.

Ref	Criteria	Description	Standards
9.c	**Project Co-Benefits: Impacts to Indigenous Peoples**	Project activities that positively impact culture, quality of life, levels of economic activity and sources of earned income for indigenous people who inhabit or have rights to land, territories and resources in the region of the project and its surroundings.	• Appropriate involvement of legitimate indigenous authorities, institutions, and organizations in project development and management. • Evidence of the incorporation of Indigenous People's recommendations into the project. • Project documentation includes evaluation on the legal situation of pertinent indigenous territories, lands and resources. • Clear benefits to indigenous peoples who may be affected by the project, based on their definition of priorities and evaluation of results, including investment in sustainable income generation, benefit sharing mechanisms, employment, and protections for indigenous cultural traditions (food security, spiritual calendar, etc.) within project area.
10.	**Stakeholder/ Public Participation**	Participation of relevant stakeholders and rights holders in project activities development, implementation and evaluation through incorporation of multiple entry points for public input and involvement. Relevant stakeholders to include Indigenous Peoples, local communities, women and potentially marginalized groups, civil organizations, public organizations and entities, and non-governmental organizations.	• All stakeholders who derive income, livelihood or cultural value from the project area and its resources are identified. • Active participation of all stakeholder groups. • Includes public review process at key stages such as during the protocol development process, during the project development stage. • Takes into account quality stakeholder participation that identifies how input is sought (written, oral, in-person meetings in community, etc). • Stakeholders determine how they will be represented, taking account of formal and informal arrangements/institutions. • Mechanisms are in place to receive and resolve grievances and disputes relating to planning and implementation of the project. • Includes a process for project developer to demonstrate how public input was taken into account and/or resulted in a change in the project.
10.a	**Stakeholder/ Public Participation: Information availability**	Information generated by the project and its availability.	• Project information available, accessible and understandable to local stakeholders (clearly justify the need for confidentiality of any documents). • Transparency and provide public access to the project's documentation at or close to the project site. • Local actors informed about the procedure to access the project documentation; • Where applicable, project documents available in regional or local languages. • Stakeholder representatives collect and disseminate all relevant information from and to their constituencies. • Information is available and disseminated in time to enable stakeholder feedback to their representatives and respecting the time needed for inclusive decision making.
11.	**Monitoring**	Regular inspection of the project activities and impacts to the project area. Regular collecting and reporting data related to the project's performance.	• Entities or organizations responsible for monitoring the project's actions and for surveillance in the project area are clearly defined. • Systematic monitoring plan included in project submittal to ensure project emissions reductions and other project requirements (social, environmental etc) are sustained for duration of project. • Systematic monitoring includes a variety of methods such as satellite imagery and community/stakeholder feedback, transit of boats in the project area, etc. • Reporting total GHG reductions or net CO2

Ref	Criteria	Description	Standards
			emissions, and other key project statistics required periodically according to an approved and published methodology. • Monitoring report is transparent and available to a variety of stakeholders. • If applicable, threatened areas are mapped and subject to surveillance to ensure protection.
12.	**Verification**	Process of periodically assessing project eligibility, implementation and results, including carbon stocks and flows, legal land title, and claimed co-benefits, by an independent third party, accredited for such work and operating according to the rules and requirements of its accreditation and accreditation body.	• Verification conducted by trained and approved third-party auditors. • Verification is conducted in accordance with the rules and requirements of the GHG Program and in line with its accreditation requirements. • Verification results in a Verification Report, appropriate portions of which are transparent and available to stakeholders.
12.a	**Verification Guidance**	Rules and procedural methods which guide how project activities should be verified.	• Guidance includes application of standards that can be understood and replicated consistently by a variety of qualified third party verifiers.
12.b	**Verification Enforcement**	Procedures and mechanisms to ensure that the agreed upon terms and conditions are carried out.	• Verification enforcement addresses grievance procedure, suspension, probation and de-accreditation. . • Independent third-party verification of reported emissions reductions completed before reduction tons registered for offset credits. • Governance authority clearly articulates corrective actions or other remedies when project obligations are breached for duration of crediting period.

Appendix B. Potential Pilot Projects

1. Juma Sustainable Development Reserve, State of Amazonas , Brazil (589,612 ha)
2. Ulu Masen Ecosystem, Aceh, Indonesia (750,000 ha)
3. Guaraqueçaba Environmental Protection Area, Brazil
4. Noel Kempff Mercado Climate Action project, Bolivia (1,523,446 ha)
5. Xingu Watershed, Para and Mato Grosso
6. Makira project, Madagascar